

336, 361, 414, 432, 485, 530, & 561 (1948), 3: 684, 686, 710, 726, 736, 801, 814, 838, 856, 879, 907, 911, 920, & 922 (1949), and 4: 982, 1086, 1106, 1113, & 1254. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 75, 96, 98, 156, & 175. 1949; Moldenke, Phytologia 4: 437--438. 1953; Moldenke, Résumé 86, 113, 115, 212, 228, 231, 278, 415, & 442. 1959; Angely, Ind. Ang. 10. 1959.

Additional citations: BRAZIL: Bahia: Blanchet 904/1294 (N), 3269 (N). Pará: Murça Pires 3662 (Z).

AEGIPHILA WIGANDIOIDES Lundell

Additional and emended literature: Moldenke, Alph. List Cit. 3: 715. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 28 & 175. 1949; Moldenke, Phytologia 4: 438. 1953; Moldenke, Résumé 34 & 442. 1959.

Additional citations: MEXICO: Chiapas: Matuda 4253 (Mi--type, W--1891341--isotype).

ADDITIONAL NOTES ON THE GENUS VITEX. I

Harold N. Moldenke

These notes are supplementary to the information given in my monograph of the genus as published in preliminary form in Phytologia 5: 142--176, 186--224, 257--280, 293--336, 343--393, 404--464, & 465--507 and 6: 13--64, 70--128, 129--192, & 197--231 in the period of 1955 to 1958.

VITEX Tourn.

Additional synonymy: Vitee L. ex Moldenke, Alph. List Cit. 3: 849, sphalm. 1949.

Additional and emended literature: A. Cunn., Precur. no. 390. 1838; Hassk., 2e Cat. Lands Pl. Tuin Buitenz. 134--136. 1844; Walp., Repert. 4: 84--92. 1845; A. Cunn., Raoul Choix 44. 1846; Hook. f., Fl. Nov. Zel. 1: 203. 1853; Griseb., Abhand. König. Gesell. Wissen. Götting. 7: 257. 1857; Hook. f., Handb. N. Z. Fl. 223. 1864; Miq., Ann. Mus. Bot. Lugd.-Bat. 2: 99. 1865; Roxb., Fl. Ind., repr. ed. Carey, 476. 1874; F. Muell., Descr. Not. Pap. Pl. 1: 11. 1875--1876; Loret & Barrandon, Fl. Montpel. 532--533 & 918. 1876; Fern.-Vill. in Blanco, Fl. Filip., ed. 3, Nov. App. 160. 1880; Forbes, Nat. Wand. East. Arch. 514. 1885; Campbell & Watt, Descript. Cat. Econom. Prod. Chutia Nagpur 39 & 55. 1886; Moloney, Sketch Forest. W. Afr. 523 & 524. 1887; Schum. & Hollrung, Fl. Kais. Wilhelmsland 121. 1889; Durand & DeWild., Bull. Soc. Roy. Bot. Belg. Compt. Rend. 38: 133--134. 1899; Warb. in Engl., Bot. Jahrb. 13: 428. 1891; K. Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee 523--524. 1900; Cheesem., Man. New Zeal. Fl., ed. 1, 565. 1906; Laing & Black-

well, Pl. New Zeal., ed. 1, 350--351, fig. 114. 1906; Valet., Bull. Dept. Agric. Ind. Néerl. 10: 51--53. 1907; Sim, For. Fl. Cape Colony 286--287, pl. 120. 1907; Pulle in Lorentz, Nova Guinea 8 (4): 685. 1912; Cockayne, Distrib. Veg. Fl. New Zeal. 14. 1919; Bridel, Bull. Soc. Chim. Biol. 3: 722. 1923; E. D. Merr., Emm. Philipp. Flow. Pl. 3: 394--398. 1923; Setchell, Carnegie Inst. Wash. Publ. 341 [Dept. Marine Biol. 20]: 55. 1924; Cheesem., Man. New Zeal. Fl., ed. 2, 763--765. 1925; Laing & Blackwell, Pl. New Zeal., ed. 3, 354--356, fig. 127. 1927; Crevost & Pételot, Bull. Econom. Indo-chine 39: 1297. 1934; Moldenke, Brief Course Syst. Bot. Lect. 1, rev., 5. 1938; Moldenke, Brief Course Syst. Bot., ed. 2, 7. 1939; Oppenheimer & Evenari, Bull. Soc. Bot. Genev. 31: 363. 1940; Laing & Blackwell, Pl. New Zeal., ed. 4, 372--373, fig. 139. 1940; Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; A. R. Schultz, Introd. Estud. Bot. Sist., ed. 2, 484, 519, & 562. 1943; E. L. D. Seymour, New Gard. Encycl. 1292. 1944; Karrer & Schmid, Helv. Chim. Act. 29: 525. 1946; Holdridge & al., Forests West & Cent. Ecuador 23, 25, 46, & 67. 1947; Moldenke, Alph. List Cit. 3: 849. 1949; Sevim, Orman Fakult. Dergisi Istanb. Univ. 2 (2): 40. 1952; Briggs & Cain, Chem. Soc. Lond. 4: 4182. 1954; Mohr, Deutsch. Med. Wschr. 79: 1513. 1954; Probst & Roth, Deutsch. Med. Wschr. 79: 1271. 1954; Aristeguieta, Clave & Descript. Fam. Arb. Venez. 192, 193, 209, 232, 236, & 306. 1954; Hansford, Reinwardtia 3: 75--112. 1954; Castañeda, Caldasia 7: 49--50. 1955; Cavaco, Bull. Mus. Nat. Hist. Nat. Paris, sér. 2, 27: 91. 1955; Ikeda, Journ. Jap. Forest. Soc. 37: 334--335. 1955; Moldenke, Phytologia 5: 343--393 & 404--464. 1956; Revist. Sudam. Bot. 10: 260. 1956; Assoc. Etud. Fl. Afr. Trop. Index 1955: 63. 1956; Moldenke, Biol. Abstr. 30: 243--344, 1418, 1704, & 3551. 1956; Satoo, Biol. Abstr. 30: 2695. 1956; Cavaco, Biol. Abstr. 30: 1703. 1956; Biol. Abstr. 29: 3602 & 3630. 1957; Van Steenis, Fl. Males. Bull. 2: 302, 474, 529, & xlii. 1957; Benson, Pl. Classif. 227. 1957; Santapau, Fl. Purandhar 103--104. 1957; Alain in León & Alain, Fl. Cuba 4: 280 & 316--318. 1957; Moldenke in Steyermark, Fieldiana 28: 1082. 1957; Angely, Fl. Paran. 11: 22 & 31. 1957; Veloso & Klein, Sellowia 8: 182, 186, & 220. 1957; E. H. Walker, Proc. 8th Pacif. Sci. Cong. 4: 402. 1957; Moldenke, Phytologia 5: 465--507 (1957), 6: 13--64 & 70--128 (1957), and 6: 129--192, 197--231, & 332. 1958; Assoc. Etud. Tax. Fl. Afr. Trop. Index 1957: 61. 1958; Cavaco, Mem. Soc. Broter. 13: 74. 1958; Biol. Abstr. 30: 4370 & 4398. 1958; Alain, Revist. Soc. Cub. Bot. 15: 47. 1958; Moldenke, Am. Midl. Nat. 59: 365--366. 1958; Lombardo, Arb. Cult. Pas. Pub. 255--256. 1958; Brizicky, Stern, & Chambers, Trop. Woods 109: 79. 1958; Assoc. Etud. Tax. Fl. Afr. Trop. Index 1958: 64. 1959; Razi, Rec. Bot. Surv. India 18: 55. 1959; B. Price, New York Herald Trib., sect. 4, p. 10, June 7. 1959; Moldenke, Phytologia 7: 85. 1959; Hänsel & Winde, Arzneim.-Forsch. [Drug Res.] 9: 189--190. 1959; Moldenke, Résumé 232, 233, 248, 250, 251, 276, 285, 302, 309, 319, 321, 335, 341, 342, 355, 356, 379, 393, 395--399, 409, 424, & 474. 1959; Moldenke, Résumé Suppl. 1: 5, 7--13, 15, 23, & 25. 1959; Reitz, Sellowia

11: 135. 1959; Veloso & Klein, *Sellowia* 11 (10): 99 & 105. 1959; Miranda, *Anal. Inst. Biol. Mex.* 30: 147. 1959; Menninger, 1960 Price List Flow. Trees [10]. 1960; Assoc. Etud. Tax. Fl. Afr. Trop. Index 1959: 53. 1960; Winde & Hänsel, *Arch. Pharm.* 293/65: 556—567. 1960; Rennó, *Levant. Herb. Inst. Agron. Minas* 151. 1960; Angely, *Fl. Paran.* 16: 80. 1960; A. R. Schultz, *Inst. Tec. Rio Grande do Sul Pub.* 30: 15. 1960; Angely, *Fl. Paran.* 15: 12 & 24. 1960; Angely, *Liv. Gen. Bot. Bras.* 35 & 58. 1960; Angely, *Fl. Paran.* 17: 47. 1961; Menninger, *Trop. Tree Seeds* [2]. 1961; Tel-Aviv Univ. Ind. Sem. 1960: 3. 1961; Kelsey Nursery Service, *Short Guide Cat.* 167: 33. 1961.

Additional excluded species: Vitex americana L. = Buddleja americana L., Loganiaceae; Vitex lanceolata Turcz. = Psychotria sarmentosa Blume, Rubiaceae.

This is a diverse genus of about 380 known specific and sub-specific entities, mostly native to the tropics and subtropics of both the Eastern and Western Hemispheres; a few also found in the temperate portions of Europe, Asia, and South Africa. At least 56 kinds are cultivated, of which the Mediterranean V. agnus-castus and the Asiatic V. negundo are the most commonly seen, each existing in several popular horticultural varieties. Both occasionally escape from cultivation and become naturalized in areas far removed from their original home. Five species are known in the fossil condition from Cretaceous to Recent formations in Europe and the Cameroons.

The generic name is derived from the Latin, vico, to bind, as with osier twigs, in reference to the flexibility of the shoots of the type species, V. agnus-castus, and was apparently first applied by Hieronymus Bock in 1552. Earlier, Pliny, Dioscorides, and Homer used the name Agnos, or its Greek equivalent, for these plants. Members of the genus are now commonly referred to in English as "chaste-trees", in French as "gattilier", in German as "Keuschbaum", and throughout most of South America as "taruma". Aristeguieta, in the reference cited above, lists the common names "aceituno", "escobillo", "guarataro", and "totumillo" for members of the genus in Venezuela.

Members of the group are mostly trees or shrubs, very rarely woody vines, with opposite or ternate, mostly palmately compound leaves of 1—7 leaflets, and cymose, axillary or terminal, usually racemiform or thyrsoid to laxly diffuse panicles of blue, violet, yellowish, or white mint-like flowers, rarely solitary or contracted to form heads. An Amazonian species is said to grow to a height of 200 feet. Certain species have been and are still used medicinally or ceremonially by the natives in various lands. A group of Madagascar species with very large tubular flowers and a more or less dome-shaped upper lip, is sometimes segregated as the separate genus Chrysomallum. On the other hand, the Asiatic genera Teijsmanniodendron and Viticipremna and the West Indian genus Pseudocarpidium were formerly included in Vitex.

The Hinton 16235 and Loveless 2774, both distributed as species

of Vitex, are not verbenaceous, while Peter 13705, distributed as Vitex gomphophylla Baker, is actually Combretum brosigianum Engl. & Diels. in the Combretaceae.

VITEX ACUMINATA R. Br.

This is described by Mrs. Clemens as a medium-sized tree, growing among mangroves on the bank of a canal. It has been collected in anthesis in December and in fruit in December and February. Herbarium specimens have sometimes been misidentified as V. glabrata F. Muell.

Additional citations: AUSTRALIA: Queensland: M. S. Clemens s. n. [1 December 1946] (Mi), s. n. [1 December 1947] (Ca--81173), s. n. [9 November 1948] (Mi); Mrs. R. L. Higgins s. n. [near Rockhampton, 2/1922] (Ca--226265); Kajewski s. n. [Gympie, Decr. 1922] (Ca--314411); C. T. White 1423 (Ca--226203).

VITEX AGNUS-CASTUS L.

Additional synonymy: Vitex agnus-castus L. ex Moldenke, Alph. List Cit. 3: 849, sphalm. 1949.

Additional literature: Griseb., Abhand. König. Gesell. Wissen. Götting. 7: 257. 1857; Loret & Barrandon, Fl. Montpel. 532--533 & 918. 1876; Bridel, Bull. Soc. Chim. Biol. 3: 722. 1923; Moldenke, Brief Course Syst. Bot. Lect. 1, rev., 5. 1938; Moldenke, Brief Course Syst. Bot., ed. 2, 7. 1939; Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; E. L. D. Seymour, New Gard. Encycl. 1292. 1944; Karrer & Schmid, Helv. Chim. Act. 29: 525. 1946; Sevim, Orman Fakult. Dergisi Istanb. Univ. 2 (2): 40. 1952; Briggs & Cain. Chem. Soc. Lond. 4: 4182. 1954; Mohr, Deutsch. Med. Wschr. 79: 1513. 1954; Probst & Roth, Deutsch. Med. Wschr. 79: 1271. 1954; Moldenke, Phytologia 5: 149, 150, & 186--196 (1955) & 5: 353 & 404. (1956; Moldenke, Biol. Abstr. 30: 1704. 1956; Moldenke, Phytologia 5: 465, 491--494 & 504 (1957) and 6: 17. 1957; Moldenke, Am. Midl. Nat. 59: 365. 1958; Price, New York Herand Trib., sect. 4, p. 10, June 7. 1959; Hänsel & Winde, Arzneim.-Forsch. [Drug Res.] 9: 189--190. 1959; Moldenke, Résumé 8, 10--12, 14, 15, 23, 24, 26, 30, 31, 57, 59--62, 76, 77, 111, 128--132, 151, 154, 158, 159, 172, 191, 225, 232, 284, 335, 379--384, 386, 388, 389, 391, 419, 420, 426, & 475. 1959; Moldenke, Résumé Suppl. 1: 8. 1959.

The species is said to grow along roadsides at Macon, Georgia, and in talus in Spain. Waby found it growing to be a tree in Turner's Hall woods, Barbados, but misidentified it as a species of Inga (Mimosaceae). Dempster says that it grows in hilly country in Epirus, while Balls found it on dark volcanic sandy soil by seashores in Turkey. Allard 11391, cited below, bears no indication on its label that it is from a cultivated plant, but I am assuming that it is. McAfee found the species growing in sandy loam soil in Oklahoma, flowering in October.

Balls describes the plant as a lax shrub to 15 feet tall and spreading by underground runners, the inflorescences 6--12 in-

ches long, flowering in August, the flowers "in shades of pale lilac or lavender-blue, each bush a separate color." Dempster says that the flowers vary from "dark-purple to nearly white", Allard calls them "purplish" or "blue-purple", while Chiao describes them as "blue, with offensive odor". Allard found the plant blossoming in July.

The Stefani s.n. [10 Mai 1903] from Corsica, distributed as this species in the herbarium of the University of California, is not verbenaceous — it probably represents a case of transposed labels. The Mori s.n. [Agosto 1933] (Ew) cited by me on page 175 of Phytologia, volume 5 (1955) as from Italy, is actually from a cultivated plant and should be shifted to the "CULTIVATED" section of the citations. Hansel & Winde, in the reference cited above, describe a new glycoside, which they call "agnosid" or "agnoside", from Vitex agnus-castus. It is said to be a pseudoindicane and possesses the formula $C_{22}H_{26}O_{11}$, with a molecular weight of 466.43. In the crystalline form it melts at $146^{\circ}C$. It is the ester of p-oxy-benzoic acid with aucubine.

Additional citations: GEORGIA: Bibb Co.: Biltmore Herb. 1786a (S). Decatur Co.: Curtiss 6813, in part (Ur). FLORIDA: Santa Rosa Co.: Curtiss 6813, in part (Ur). ALABAMA: Lee Co.: Earle & Baker s.n. [Auburn, 10/9/1898] (Dt). OKLAHOMA: Payne Co.: McAfee 85 (Ca--882863); W. L. Spears s.n. [July 10, 1935] (Um--179). TEXAS: Travis Co.: Harpin, Waldorf, & Barkley 13081 (Ca--882862, Ok). WINDWARD ISLANDS: Barbados: Waby 105 (Bm). FRANCE: Albert s.n. [Magnier 1261] (Um--177); Autheman 5467 (Um--178); Despaty s.n. [Duffour 1871] (Vi); Hérail s.n. (Um--180); Monnier s.n. [1832] (Vi); F. Schultz 1207 (B); Théoeneau s.n. [Juli 1868] (B); Tholin s.n. [22 Julii '82] (B). SPAIN: Sennen 429 (S), s.n. [Duffour 1871 bis] (Um--176). GREECE: Cyrén s.n. [Agrinion, 15/6/1934] (Go); L. Dempster 2467 (Ca--179808); Engelhardt s.n. [3.8.1904] (B), s.n. [23.8.1904] (B); Heldreich 599 (B); Mattfeld 2035 (Ca--347616). AEGEAN ISLANDS: Samos: B. Brown s.n. [June & July, 1924] (Ca--986781). ITALY: Bigo s.n. [18/8/1871] (B). CYPRUS: H. Lindberg s.n. [22.7.1939] (Go). SICILY: H. Ross 865 (B). CORSICA: O. Debeaux 62 (B). CRETE: E. H. L. Krause 16803 (B); E. Reverchon 185 (B). JUGOSLAVIA: Dalmatia: M. Burret 342 (B), 373 (B); O. Krebs s.n. [Junio 1901] (B). Fiume: Noé 138 (B). Herzegovina: Engelhardt s.n. [31/VIII/1900] (B). Istria: Engelhardt s.n. [2/8/1909] (B). Trieste: Hrouven s.n. [14/7/1889] (B); Vatoda s.n. [9.VIII.1921] (Um--171, Vi). BULGARIA: Dingler s.n. [bei Dedeaghatsch] (B). MOROCCO: Quer 545 (Ca--464877). ALGERIA: E. Reverchon 66063 (Vi). TURKEY: Balls 565 (Ca--79895); Bornmüller 1236 (B, B); Callier 171 (B, B); Halácsy 1437 (B); B. Post s.n. [Aug. 11, 1935] (Dt). ISRAEL: Field & Lazar 233 (Ca--583318, Ca--620197). CULTIVATED: Brazil: G. A.

Black 48-3635 (Ca--72808). California: W. R. Dudley s.n. [July 1895] (Du--362565). China: Chiao 52 [Herb. Univ. Nanking 10476] (Ca--281054). Florida: McFarlin 5571 (Mi). Germany: Baenitz s.n. [15.9.1910] (B); Rettig s.n. [Koehne 321] (B). Kansas: Gates 15025 (Um--167). North Carolina: Biltmore Herb. 1786 [July 27th] (S), 1786 [September 27th] (S). Oklahoma: Felkner 10 (Ok--27413); "M. V. H." 93 (Ok); Hopkins, Nelson, & Nelson 654 (Ok). Texas: Knobloch 187 (Ok); Tharp s.n. [Austin, 8/20/41] (Ca--882866, Vi). Virginia: H. A. Allard 11391 (Ca--793723), 20670 (We).

VITEX AGNUS-CASTUS f. ALBA (West.) Rehd.

Additional synonymy: Vitex agnus-castus f. albiflorus Carr., in herb.

Additional literature: Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; E. L. D. Seymour, New Gard. Encycl. 1292. 1944; Moldenke, Phytologia 5: 189 (1955) and 5: 353. 1956; Moldenke, Résumé 14, 30, 131, 158, 225, 232, 379, 380, 383, 425, 426, & 475. 1959; Moldenke, Résumé Suppl. 1: 8. 1959.

Additional citations: SPAIN: A. Peter 45229 [V.362] (B). ITALY: Frank s.n. [Messina, Julio 1882] (B).

VITEX AGNUS-CASTUS f. LATIFOLIA (Mill.) Rehd.

Additional literature: Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; E. L. D. Seymour, New Gard. Encycl. 1292. 1944; Moldenke, Phytologia 5: 190--193, 196, & 259 (1955), 5: 353 (1956), and 5: 465. 1957; Lombardo, Arb. Cult. Pas. Pub. 47 & 255. 1958; Moldenke, Résumé 130--132, 158, 225, 227, 232, 379, 380, 385--387, 390, 427, & 475. 1959; Menninger, 1960 Price List Flow. Trees [10]. 1960; Kelsey Nursery Service, Short Guide Cat. 167: 33. 1961.

Additional illustrations: Lombardo, Arb. Cult. Pas. Pub. 255. 1958.

The Schulz & Schulz s.n. specimen cited below has most of its leaflets split at the base into a long lateral lobe. The Kelsey reference cited above describes the form as growing to 6 feet tall, with showy blue flowers from July to frost, growing well in sun and in acid soil, called "chaste tree"; 18--24-inch plants are offered for \$1.50 each or two for \$2.50.

Additional citations: MOROCCO: Quer 545 (B). IRAN: Bornmüller 645 (B). CULTIVATED: Germany: Bornmüller s.n. [1878--1882] (B); Schulz & Schulz s.n. [24.9.1897] (B). Jamaica: G. R. Proctor 11205 (Bm). New York: H. N. Moldenke 21251 (Bs, Mm, Ok, Sm), 21572 (Sm). Virginia: H. A. Allard 11391 (Gg--381232).

VITEX AGNUS-CASTUS f. ROSEA Rehd.

Additional synonymy: Vitex agnus-castus var. rosea Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941.

Additional literature: Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; Moldenke, Phytologia 5: 195--196. 1955; Moldenke, Résumé 131, 225, 386, 426, & 475. 1959; Moldenke, Résumé Suppl. 1: 8 & 23. 1959.

Additional citations: JUGOSLAVIA: Dalmatia: Brunnelle s.n. [5/7/1886] (B).

VITEX AGNUS-CASTUS var. CAERULEA Rehd.

Additional literature: Moldenke, *Phytologia* 5: 190. 1955; Moldenke, *Résumé* 24, 30, 120, 131, 225, 379, 380, 383, 426, & 475. 1959; Moldenke, *Résumé Suppl.* 1: 8. 1959.

The Heldreich 599 collection cited below is inscribed "floribus coeruleis et carneis" so may represent a mixture of this variety and of f. rosea Rehd.

Additional citations: GREECE: Heldreich 599 (B). JUGOSLAVIA: Dalmatia: Brunnelle 2014 (B). CULTIVATED: North Carolina: P. O. Schallert 351 (Ok), s.n. [June 20, 1941] (Ca--882865).

VITEX AGNUS-CASTUS var. PSEUDO-NEGUNDO Hausskn.

Additional literature: Moldenke, *Phytologia* 5: 193--195. 1955; Moldenke, *Am. Midl. Nat.* 59: 365--366. 1958; Moldenke, *Résumé* 132, 158, 159, 379, 384, 388, 427, & 475. 1959; Moldenke, *Résumé Suppl.* 1: 11. 1959; Razi, *Rec. Bot. Surv. India* 18: 55. 1959; Tel-Aviv Univ. Ind. Sem. 1960: 3. 1961.

The Gabriels, on the label of the specimen cited below, claim that V. hausknechtii Borm. is identical with this variety.

Additional citations: UNION OF SOCIALIST SOVIET REPUBLICS: Turkmanaskaya: Bornmtiller 917 (B). JORDAN: Kneucker 430 (B). IRAQ: Field & Lazar 735 (Ca--620082), 818 (Ca--620076). IRAN: Bornmtiller 5128 (B); Gaubas 902 (B); Rechinger & Rechinger 5778 (Ca--42740); T. Strauss s.n. [Juli 1897] (B). AFGHANISTAN: Gabriel & Gabriel 3 (B). BALUCHISTAN: Rechinger, Rechinger, Aellen, & Esfandiari 3996 (Ca--42739). PAKISTAN: Sind: Stapf s.n. [13/VII/85] (B).

VITEX AGNUS-CASTUS var. SERRATA Moldenke

Additional literature: Moldenke, *Phytologia* 5: 196. 1955; Moldenke, *Résumé* 225, 232, 385, & 475. 1959.

The Petry specimen cited below shows ten serrate leaflets.

Additional citations: CULTIVATED: France: Petry s.n. [Septbr. 1900] (B).

VITEX AJUGAEFLORA Dop

Additional literature: Moldenke, *Phytologia* 5: 353. 1956; Moldenke, *Résumé* 177, 225, 380, & 475. 1959.

Pierre describes this as a tree 20 to 30 meters tall, flowering in June, and called "binh linh nge". It seems to be very closely related to V. peduncularis Wall. and may actually be conspecific with it. It has been collected in fruit in June.

Additional citations: INDOCHINA: Annam: Poilane 6844 (B--cotype). Cochinchina: Pierre 24 [Bois 24] (B), 1509 (Ca--54869--cotype), s.n. [Gia Pau me, 9/1865] (Ca--54870), s.n. [10/1866] (B); Poilane 40764 (B). CULTIVATED: Indochina: Pierre 1509 (B--cotype).

VITEX ALTISSIMA L. f.

Additional literature: Campbell & Watt, *Descript. Cat. Econom. Prod. Chutia Nagpur* 55. 1886; Moldenke, *Phytologia* 5: 197—202 (1955), 5: 354—355 (1956), 5: 465 (1957), and 6: 13. 1957; Moldenke, *Résumé* 159, 164, 167, 177, 188, 191, 202, 225, 319, 380, 381, 385, 388—390, & 475. 1959.

Campbell & Watt, in the reference cited above, record the vernacular names "bhadu" and "marak". They state that the wood is good for the manufacture of yokes, and that the bark is applied externally in the treatment of chest pains in India. The species has been collected at 3000 feet altitude in Madras.

The Menninger material cited below illustrates the dimorphic character of the leaves of this species. The flowering branches exhibit hardly any wings on the petioles, but the non-flowering branches have conspicuous wings. Menninger reports that the two kinds of branches grow side by side on the tree.

The Herb. Lemmon s.n. [Mangalor, Canara] in the herbarium of the University of California, determined as this species, is not verbenaceous.

Additional citations: PAKISTAN: East Bengal: Griffith 6066 ["Hk. and Bth. no. 11"] (Ut—11518). INDIA: Bombay: Hohenacker 115 (B), s.n. [Prope urbem Mangalor] (B). Madras: Yeshoda 184 (B). State undetermined: R. Wight 2325 (B). CULTIVATED: Florida: Menninger s.n. [Moldenke 21678] (Bs, Ok).

VITEX ALTMANNI Moldenke

Additional literature: Moldenke, *Phytologia* 5: 203. 1955; Moldenke, *Résumé* 191, 196, & 475. 1959.

This plant has been misidentified in herbaria as V. parviflora A. L. Juss.

Additional citations: PHILIPPINE ISLANDS: Luzon: Loher s.n. [Rizal Province] (Ca—229199).

VITEX AMANIENSIS Pieper

Additional literature: Moldenke, *Phytologia* 5: 203—204. 1955; Moldenke, *Résumé* 145 & 475. 1959.

Collectors describe this species as a tree, 8 feet tall, with a single stem and mauve aromatic flowers, blooming in October, growing in groups in rich brown soil in thickets at altitudes of 33 to 800 meters. Tanner reports the common name "mnegege" and says that the roots are boiled and the resulting liquid drunk in the treatment of sharp pains in the stomach. It has been misidentified in herbaria as V. amboniensis Gürke.

Citations: TANGANYIKA: A. Peter 3659 [O.I.105] (B, Z); Tanner 3315 (Ba).

VITEX AMBONIENSIS Gürke

Additional literature: Moldenke, *Phytologia* 5: 355 (1956) and 5: 465. 1957; Moldenke, *Résumé* 143, 145, 148, 151, 154, & 475. 1959.

Peter describes this plant as a shrub 3 meters tall or a tree

6 meters tall, with pink flowers, blossoming in June. He found it in fruit in January, February, and June, growing at altitudes of 250 to 1180 meters. The Tanner 3315 distributed as this species is V. amaniensis Pieper.

Additional citations: TANGANYIKA: Engler s.n. [7.II.1905] (B); A. Peter 21267 [O.IV.202] (B), 22531 [O.IV.255] (B), 23015 [O.IV.279] (B), 23801 [O.IV.313] (B, B), 35068 [V.127] (B), 35486 [V.135] (B), 35642 [V.136] (B), 35700 [V.137] (B), 36020 [V.142] (B).

VITEX AMBONIENSIS var. AMANIENSIS Pieper

Additional literature: Moldenke, *Phytologia* 5: 206. 1955; Moldenke, *Résumé* 145 & 475. 1959.

Citations: TANGANYIKA: Herb. Inst. Amani 221 (B).

VITEX BENTHAMIANA Domin

Additional literature: Moldenke, *Phytologia* 5: 355. 1956; Moldenke, *Résumé* 211, 390, & 475. 1959.

The original description of Bentham's V. trifolia var. parviflora is "erect; leaflets 5 or sometimes 3, ovate or ovate-lanceolate, acute; flowers much smaller; resembling V. Negundo from which it is scarcely distinguishable."

VITEX BREVILABIATA Ducke

Additional literature: Moldenke, *Phytologia* 5: 218—220. 1955; Moldenke, *Am. Midl. Nat.* 59: 365. 1958; Moldenke, *Résumé* 111 & 475. 1959.

Coelho describes the flowers of this plant as rose-colored, blooming in August.

Additional citations: BRAZIL: Amazonas: Coelho s.n. [*Herb. Inst. Nac. Pesq. Amaz. 4024*] (Bs), s.n. [*Herb. Inst. Nac. Pesq. Amaz. 5729*] (Z).

VITEX BUCHANANII J. G. Baker

Additional literature: Moldenke, *Phytologia* 5: 220—221. 1955; Moldenke, *Résumé* 145, 150, 151, 381, & 475. 1959.

Additional citations: TANGANYIKA: Schlieben 1614 (B).

VITEX BUCHANANII var. QUADRANGULA (Gürke) Pieper

Additional literature: Moldenke, *Phytologia* 5: 221. 1955; Moldenke, *Résumé* 145, 150, 381, 388, & 475. 1959.

Additional citations: BRITISH NYASALAND: Stolz 512 (B).

VITEX BULUSANENSIS Elm.

Additional and emended literature: Elm., *Leafl. Philipp. Bot.* 10: 3798—3799. 1939; Moldenke, *Phytologia* 5: 223. 1955; Moldenke, *Résumé* 185 & 475. 1959.

A small suberect tree; trunk 3 dm. in diameter 8 m. high, subterete, branched chiefly toward the top; wood very hard and brittle, dull-brown except the thin dingy- or yellowish-white sapwood; bark smoothish, gray, melleous except the epidermis;

branchlets ascending, rigid, breaking with a snap, gray, glabrous, the young twig portion covered with a ferruginous pubescence which soon wears off with age; leaves not numerous, opposite, terminal or laterally scattered; petioles stout, 8 cm. long, terete, ferruginous, swollen at the base and leaving large obconic scars after falling, blackish-brown when dry, thickened at the distal end; leaflets 6, diverse in size, the central blade 12 cm. wide across the middle or widest portion, 26 cm. long, the lower blades 10 cm. long and 5 cm. wide or even less, all elliptic-oblong, horizontally spreading, subchartaceous, entire, shallowly folded upon the upper sublucid surface, obtuse at the base, mostly acute and recurved at the apex, only slightly paler green beneath, curing nearly equally tan-brown on both surfaces, glabrous; midrib pronounced beneath and dark-brown, plane above or canaliculate toward the base; secondaries 5--15 (depending on the size of the leaflet), conspicuous, ascending, subparallel, the tips reticulately united or anastomosing, the primary reticulations coarse, the ultimate ones very fine; petiolules 1.5--4 cm. long, radially spreading, strict, yellowish-brown-pubescent especially at their thickened bases, relatively stout, canaliculate on the upper surface; flowers not known; infructescence erect or suberect, terminal or axillary, about as long as the subtending leaf, sparingly paniculately branched, 1--3 dm. long, branched from below the middle, ferruginous when young, glabrous in age and curing blackish-brown; fruiting-calyx sessile or subsessile, broadly turbinate, yellowish-brown-pubescent on the outer surface, scattered along the slender rachis, subtended by minute bractlets, pale-green when fresh; fruit black, shiny, subglaucous, ellipsoid, 1.5 cm. long, longitudinally striate.

The type of this species was collected by Adolph Daniel Edward Elmer (no. 17004) in secondary woods, at an altitude of 1750 feet, at Irosin, Mount Bulusan, in the province of Sorsogon, Luzon, Philippines, in August, 1916. It is very probable that this is actually a species of Teijsmanniodendron. In fact, Elmer states that it is closely related to Vitex curranii H. J. Lam [= Teijsmanniodendron ahernianum (Merr.) Bakh.], but differs in having its leaflets not so thick-textured and more nervose, with the veinlet reticulation quite evident beneath.

Additional citations: PHILIPPINE ISLANDS: Luzon: Elmer 17004 (Ca--272090--isotype, Um--174--isotype).

VITEX BURMENSIS Moldenke, sp. nov.

Arbor excelsa; foliis 5-foliatis; foliolis ellipticis acuminatis integris, ad basin acuminatis, supra breviter pubescentibus, subtus dense fulvo-pubescentibus; inflorescentiis axillaribus abbreviatis ubique dense pubescentibus.

Tall tree, 10 m. or more in height; branchlets acutely tetragonal, slightly wing-margined, rather densely brown-puberulent, less so in age; twigs very acutely tetragonal and margined, very densely brown-puberulent, sulcate in drying; leaves decussate-opposite, 5-foliolate; petioles slender, 6.5--8.3 cm. long,

densely brown-pubescent; leaflets unequal; petiolules 4--17 mm. long, densely brown-pubescent, flattened and slightly canaliculate above; leaflet-blades membranous, brunnescent in drying, somewhat lighter beneath, elliptic, acuminate at both ends, rather densely short-pubescent above, very densely brown- or fulvous-pubescent beneath, the central one 11--13 cm. long and 4.5--5.3 cm. wide, the rest proportionately smaller; inflorescence axillary, shorter than the petiole, about 7 cm. long, rather loosely many-flowered, cymose, densely brown-pubescent throughout; peduncles slender, flattened, 2.3--3.3 cm. long, usually one long and one shorter one in each axil; pedicels very short, 1 mm. or less in length, densely pubescent; calyx campanulate, about 2 mm. long and wide, densely brown-pubescent on the outside, the rim shallowly dentate; corolla about 7 or 8 mm. long, densely fulvous-pubescent on the outer surface.

The type of this species was collected by R. S. Cooper (no. 5969a) in the mixed forest around Kanpelet Station, Mount Victoria, Burma, on May 27, 1924, and is deposited in the herbarium of the University of California at Berkeley.

Citations: BURMA: Upper Burma: R. S. Cooper 5969a (Ca--170274--type).

VITEX CALOTHYRSA Sandw.

Additional literature: Moldenke, *Phytologia* 5: 356 & 404. 1956; Moldenke, *Biol. Abstr.* 30: 1704. 1956; Moldenke, *Résumé* 74, 111, 387, 415, & 475. 1959; Moldenke, *Résumé Suppl.* 1: 5. 1959.

Maguire, Wurdack, & Bunting describe this species as a sprawling tree 3--10 m. tall, the corolla blue-purple, its throat yellow, or purple-blue, the lower lip with a yellow spot at its base. Green fruit was present in February. It has been found at altitudes of 100 to 140 meters, and is said to be "occasional" in distribution.

Additional citations: VENEZUELA: Amazonas: Maguire, Wurdack, & Bunting 37402 (N, S), 37413 (N, S); Wurdack & Adderley 43238 (N, S). SURINAM: Lanjouw & Lindeman 2662 (N, Ut--16655b). BRAZIL: Amazonas: William s.n. [*Herb. Inst. Nac. Pesq. Amaz.* 2977] (Z).

VITEX CANESCENS Kurz

Additional literature: Moldenke, *Phytologia* 5: 259--261 (1955) and 5: 356. 1956; Moldenke, *Résumé* 164, 166, 171, 174, 177, 178, 381, & 475. 1959.

Recent collectors describe this as a shrub 6 feet tall or a tree 4 m. tall and 90 cm. in trunk circumference, with white, light-yellow, or yellowish-white flowers in August. Green fruit has been collected in February and is described as "bitter". The species is said to be common in mixed deciduous forests and scrub jungles in Thailand. It has been misidentified in herbaria as V. pubescens Vahl.

Additional citations: BURMA: Upper Burma: R. E. Cooper 6107 (Ca--170247). CHINA: Kwangtung: Peng, Tak, & Kin 883 [*Herb. Can-*

ton Chr. Coll. 12882] (Ca--274712). Szechuan: T. C. Lee 3321 (W--1990034); W. Wang 8114 (W--1990704). HAINAN ISLAND: How 70722 (B). INDOCHINA: Annam: Poillane 102 (Ca--38883), 6275 (Ca--53984). Cambodia: Bejaud 522 (B); Thorel s.n. [Me-Kong] (B). Cochinchina: Harmand 1889 [Pierre 648] (B, B, Ca--53979); Thorel 1591 (B). THAILAND: Bunpheng 1167 [Herb. Roy. Forest Dept. 22862] (Gg); Khantchai 341 [Herb. Roy. Forest Dept. 15970] (Sm); Winnit 34 (Ca--348889).

VITEX CAPITATA Vahl

Additional literature: Moldenke, *Phytologia* 5: 261--264 (1955), 5: 356 (1956), and 5: 466. 1957; Moldenke in Steyermark, *Fieldiana* 28: 1082. 1957; Moldenke, *Résumé* 62, 63, 69, 74, 111, 225, 309, 330, 381, 382, 391, & 475. 1959.

Additional citations: VENEZUELA: Bolívar: Ll. Williams 11642 (Ew), 12046 (Ew), 12696 (Ew). Guárico: Aristeguieta 4183 (Bm), 4187 (Bm). SURINAM: Rombouts 151 (Ut--14172b). BRAZIL: Rio Branco: J. G. Kuhlmann 2915 (S, S--photo).

VITEX CHRYSOMALLUM Steud.

Additional literature: Moldenke, *Phytologia* 5: 269--271. 1955.

Additional citations: MADAGASCAR: Decary s.n. [1 Mai 1928] (S).

VITEX CILIATA Pierre

Additional literature: Moldenke, *Phytologia* 5: 356. 1956; Moldenke, *Résumé* 140, 382, & 475. 1959.

Additional citations: FRENCH EQUATORIAL AFRICA: Gabun: Heintz 10 (B); Klaine 2809 (B), 3227 (Ca--54410); Le Testu 1701 (N).

VITEX CLEMENTIS Britton & P. Wils.

Additional literature: Moldenke, *Phytologia* 5: 273--274. 1955; Alain in León & Alain, *Fl. Cuba* 4: 317 & 318. 1957; Moldenke, *Résumé* 53 & 475. 1959.

VITEX COFASSUS Reinw.

Additional literature: Moldenke, *Phytologia* 5: 356 (1956) and 6: 13--14. 1957; Moldenke, *Résumé* 186, 191, 195, 198, 199, 202--205, 225, 274, 382, 386, 388, 423, & 475. 1959.

Additional synonymy: Vitex confusus Reinw. ex Moldenke, *Résumé* 382, in syn. 1959.

New Guinea foresters give the following additional descriptive details about the species: Small or medium-sized to large forest tree, 8--40 m. tall, branching from the base or the first branch 3--26 m. above the ground, of poor form or moderately straight; crown light-green, large and compact or spreading, to 20 m. in diameter, often sparse, the canopy irregular; bole 3--26 m. tall, usually crooked and twisted, fluted or

deeply fluted and channeled, 30--85 cm. in diameter at breast height, to 225 cm. in circumference at 2 m. height, with high fluted buttresses 2--6 m. tall, the buttresses very much grooved and flanged, fluted to the first branch, to 1.2 m. wide; trunk freely branched, 30--50 cm. in diameter; bark close, varying from light gray-brown, pale brownish-gray, or brown to pale-gray or white, 5--13 mm. thick, scaly or papery but of very fibrous texture, the outer bark varying from yellow-brown or very pale-brown to gray-brown, papery and peeling off in large thin fibery flakes or papery strips, somewhat mealy, the inner bark varying from dark straw or straw-colored to white with conspicuous rings of fibers or else green on the back with alternate yellow and white layers within; blaze light gray-brown; wood yellow to black in the center, with a definite smell, the sapwood often not clearly defined; sapwood varying from straw-colored or yellowish-brown to yellow, pale-yellow, or yellowish, about 5 cm. thick; heartwood varying from dark- or chocolate-brown to light-brown, often sharply defined, separated tangentially with some yellow; branches twisted, heavy; leaves rather thin, dull, the blades varying from dark- or dull-green to medium- or light-green or even light yellowish-green above, medium-green to pale or glaucous beneath; venation depressed above, yellowish and prominently raised beneath; inflorescence sometimes described as "dense compound spikes" or "axillary and terminal racemes", actually paniculate and cymose; corolla varying from dark-purple, blue-purple, or purplish-blue to violet, pale-violet, or mauve, sometimes described as "lavender and white"; fruit fleshy, green or light-green to gray-green when immature, dark-blue or black when ripe, black-purple inside, ovoid, surrounded on the lower half by the persistent fruiting-calyx.

The species has been found by collectors in clay or clayey soil, alluvial river flats, dry gravelly flatland in rainforests, flatland planting areas, swamp forests, primary forests, secondary forests, especially low secondary growth, and near riverbanks. It is said to be frequent in the canopy layer of rainforests and to be very common in flat country on Morotai. Some collectors note that there is a low percentage of fruit formation compared to the number of flowers produced. In addition to the months mentioned in *Phytologia* 5: 276 (1955), the species has been found in anthesis in June and October, and in fruit in January, March to May, September, and October. The very durable timber is used to make house posts, drums, plates, ax handles, and planks.

Additional vernacular names are "bitim", "garamut", "gowaha", "gopassa", "gowaka", "jangor", "la vase", "mokuli", "nar-a-vain", "pairi", "sarikon", and "sidoi".

The Kanehira 5 distributed as this species is var. puberula H. J. Lam.

Additional citations: CELEBES: Binnemeijer 10773 (Ca--235266); Politan 6 [Boschbouwproefst. BB.31891] (Vi). MOLUCCA ISLANDS: Ceram: Kornassi 451 (Ca--234911), 1039 (Ca--265952). Morotai:

Main & Aden 926 (Ng--16903); Tangkilisan 19 [Boschbouwproefst. BB. 33731] (Ng--16870), 239 [Boschbouwproefst. BB.33909] (Ng--16959). NEW GUINEA: Batanta Island: Van Royen 3247 (N). Dutch New Guinea: Brouwer B.W. 809 (Ng--20224), B.W.843 (Ng--20225); Pleyte 1033 (Ng--16846, Ng); Rappard B.W.690 (Ng--16944). Northeastern New Guinea: Barrett 18 (Ng--16977); Cavanaugh 2022 (Ng--6567, Ng), 4052 (Ng--6573); Clemens 119 (B); Floyd 5388 (Ng--16914); Fryar 3347 (Ng--6570), 4000 (Ng--6572); E. Gray 3313 (Ng--6569); Hoogland 4869 (Ng--8326); McAdam 250 (Ng--6562, Ng); McViegh & Ridgwell 7366 (Ng--16900); "N. G. F." 866 (Ng--6564); A. C. Richardson 4088 (Ng--16869); J. C. Saunders 527 (Ng--16822); F. T. Vickery 1421 (Ng--6565, Ng); White, Dadswell, & Smith 1616 (Ng--6566); Womersley 2913 (Ng--6563), 2989 (Ng--6553), 3897 (Ng--6571). Papua: Brass 21909 (Ng--17165), 21950 (Ng--17163). BISMARCK ARCHIPELAGO: New Britain: Floyd 6474 (Ng--16888), 6633 (Ng--16916); Womersley & Kazakof 7082 (Ng--16899). AROE ISLANDS: Kobroor: Buwalda 5006 (Ng--16956). SOLOMON ISLANDS: Bougainville: "N. G. F." 577 (Ng--6563). CULTIVATED: Java: Herb. Hort. Bot. Bogor. s.n. (B).

VITEX COFASSUS var. PUBERULA H. J. Lam

Additional literature: Moldenke, *Phytologia* 5: 280. 1955; Moldenke, *Résumé* 186, 202, 204, & 475. 1959.

Herbarium material of this variety is often misidentified as typical V. cofassus Reinw.

Additional citations: CAROLINE ISLANDS: Pelew Islands: Kanehira 5 (Ca).

VITEX COLUMBIENSIS Pittier

Additional literature: Moldenke, *Phytologia* 5: 280 & 293--295. 1955; Moldenke, *Biol. Abstr.* 30: 1704 & 3551. 1956; *Biol. Abstr.* 30: 4370. 1958; Moldenke, *Résumé* 69, 419, & 475. 1959.

VITEX COMPRESSA Turcz.

Additional literature: Moldenke, *Phytologia* 5: 295--300. 1955; Moldenke, *Résumé* 62--64, 69, 74, 76--78, 85, 111, 225, 276, 381, 389, 390, & 475. 1959.

Additional citations: BRITISH GUIANA: Jenman 7637 (S); Little 16877 (Z).

VITEX CONGOLENSIS DeWild. & Th. Dur.

Additional literature: Moldenke, *Phytologia* 5: 301--303 (1955) and 5: 357. 1956; Moldenke, *Résumé* 137, 139, 142, 379, 383, 419, & 475. 1959.

Additional citations: BELGIAN CONGO: Callens 4947 (Z).

VITEX COOPERI Standl.

Additional literature: Moldenke, *Phytologia* 5: 303--305. 1955; Moldenke, *Résumé* 43, 44, 47, 49, & 475. 1959.

The species is said by Allen to have pale-blue flowers and to grow in pastures.

Additional citations: NICARAGUA: Zelaya: Shank 14172 (Ca--29618). COSTA RICA: Puntarenas: P. H. Allen 6250 (Ca--10782). PANAMA: Canal Zone: Stern & Chambers 159 (N).

VITEX CYMOSA Bert.

Additional literature: Moldenke, *Phytologia* 5: 357. 1956; Moldenke, *Résumé* 69, 74, 111, 115, 118, 128, 225, 301, 382, 383, 387, & 475. 1959; Angely, *Fl. Paran.* 16: 80 (1960) and 17: 47. 1961.

Additional synonymy: Vitex cimosa Bert. ex Angely, *Fl. Paran.* 16: 80, sphalm. 1960.

Additional citations: BRAZIL: Pará: Krukoff 5903 (Mi). PARAGUAY: Hassler 12307 (Go). CULTIVATED: Brazil: Bot. Gard. Goeldi tree 863 (Bm).

VITEX DIVARICATA Sw.

Additional literature: Moldenke, *Phytologia* 5: 357. 1956; Moldenke, *Résumé* 56, 57, 59--63, 74, 225, 234, 353, 383, 391, & 476. 1959.

The Williams specimen cited below bears striking resemblance to V. orinocensis var. multiflora (Miq.) Huber.

Additional citations: PUERTO RICO: Otero M.47 (Mi. VENEZUELA: Aragua: Ll. Williams 11119 (Mi).

VITEX DIVARICATA var. CUBENSIS Urb.

Additional literature: Moldenke, *Phytologia* 5: 319--321. 1955; Moldenke, *Résumé* 53, 57, 225, 383, & 476. 1959.

Howard describes this as a shrub 7 feet tall, growing on limestone outcrops.

Additional citations: CUBA: Havana: P. Wilson 1066 (Ca--683274--cotype). Las Villas: C. F. Baker 3409 (Ca--683293); Howard, Briggs, Kamb, Lane, & Ritland 59 (Ca--998435).

VITEX DONIANA Sweet

Additional literature: Moloney, *Sketch Forest. W. Afr.* 523. 1887; Moldenke, *Phytologia* 5: 357--358. 1956; Alain in León & Alain, *Fl. Cuba* 4: 317 & 318. 1957; Moldenke, *Résumé* 53, 133--140, 142, 143, 145--147, 150, 151, 155, 157, 225, 227, 382, 384, 387, 390, 426, & 476. 1959; Moldenke, *Résumé Suppl.* 1: 9 & 10. 1959.

Alain records the vernacular name "ofón" from Cuba, Peter lists "mfudu" from Tanganyika, and Brass gives "npindimbi" from British Nyasaland. Dr. Buchheim reports that there is a specimen of this species collected by Engler on October 7, 1905 [A. Peter 51820] preserved in the Berlin herbarium.

Recent collectors describe this species as a medium-sized much-branched tree, completely deciduous, the trunk 30--80 cm. in diameter, the bole thick, giving thick cover, bark gray-lined, with brown slip; wood white, soft to cut; sap colorless; leaves

glossy, bright-green or very dark-green above and grayish beneath; flowers mauve, blue, purple, or white to pale-pink, small, aromatic; fruit edible, blackish-purple when ripe. Peter 8279 and 51821 exhibit leaves that are abundantly galled, the galls prominent and rounded on the upper leaf-surface. In addition to the months listed in my monograph, it has been found in anthesis in January, April, June, and November, and in fruit in June and July. It has been collected at altitudes of 300 to 2165 meters, on hard stony soil in open parkland and in gullies in Brachystegia woodland. It has been misidentified in herbaria as V. madiensis Oliv.

Additional citations: LIBERIA: Dinklage 1905 (B). IVORY COAST: Aubréville 806 (B); Serv. Forest. 428bis (B). CAMEROONS: Zenker 742b (B); Zenker & Staudt 302 (Ca--617110). TANGANYIKA: Engler s.n. [A. Peter 51818] (B), s.n. [A. Peter 51819] (B); Faulkner 1163 (S), 1202 (S); Goetze 1397 (B); Grote s.n. [A. Peter 51809] (B); A. Peter 4491b [O.I.137] (B), 7250 [O.II.115] (B), 7299 [O.II.117] (B), 8279 [O. III.30] (B), 8334 [O.III.33] (B), 12817 [O. III.162] (B), 14950 [O.III.234] (B), 16207 [O.IV.35] (B), 16351 [O. IV.43] (B), 17281 [O.IV.78] (B), 31639 [V.55] (B), 32109 [V.66] (B), 51821 [O.III.30] (B); Schlieben 1282 (B); Stuhlmann s.n. [A. Peter 51817] (B); Tanner 1758 (Ca--183319). ZANZIBAR: E. H. L. Krause 16804 (B). ANGOLA: Lunda: Gossweiler 14109 (B). BRITISH NYASALAND: Brass 17074 (Ca--17074); Stolz 402 (B).

VITEX DONIANA var. PARVIFOLIA (Engl.) Moldenke

Additional literature: Moldenke, *Phytologia* 5: 326--327. 1955; Moldenke, *Résumé* 139, 142, 148, 382, & 476. 1959.

Additional citations: BELGIAN CONGO: Callens 4778 (Z).

VITEX DUCKEI Huber

Additional literature: Moldenke, *Phytologia* 5: 328--330 (1955) and 5: 358--359. 1956; Moldenke, *Résumé* 111 & 476. 1959.

Additional citations: BRAZIL: Pará: Murça Pires, Black, Wurdack, & Silva 6523 (Bm, N).

VITEX EPIDICTYOIDES Mildbr.

Additional literature: Moldenke, *Phytologia* 5: 332. 1955; Moldenke, *Résumé* 142, 145, 150, & 476. 1959.

Peter describes this plant as a tree, 2 m. tall, fruiting in February, growing at an altitude of 840 meters.

Additional citations: TANGANYIKA: A. Peter 37004 [V.158] (B), BRITISH NYASALAND: Stolz 556 (B--isotype).

VITEX ERIOCLONA H. J. Lam

Additional literature: Moldenke, *Phytologia* 5: 332--333. 1955; Moldenke, *Résumé* 195 & 476. 1959.

Tree; branches subtetragonal, the younger parts striate, fulvous- or cinereous-farinose; leaves 1-foliolate, petiolate; petioles very slender, 1.5--3.5 cm. long, with an indistinct articu-

lation at the apex, sulcate above, fulvous- or cinereous-farinoso; leaflet-blade sessile, ovate-elliptic, 9.5—15 cm. long, 4.5—5.7 cm. wide, acute at the apex, entire, acute or broadly cuneate to rounded or truncate at the base, glabrous (except for the puberulous midrib) and brunnescent above in drying, very densely yellow tomentose beneath; secondaries 7—12 per side, prominent; inflorescence terminal, paniculate, foliose at the base, rather conspicuously bracteolate, fulvous- or cinereous-farinoso throughout; cymes opposite, many-flowered, the lower ones 10—14 cm. long and 4—6 cm. wide, borne on a peduncle 3—4 cm. long; bractlets foliaceous, ovate-lanceolate, 3—4.5 mm. long, 1.5—2 mm. wide; flowers known only in the bud stage; pedicels 1—5 mm. long; calyx cupuliform, about 2 mm. long, tomentose on the outer surface, the rim with 5 minute acute teeth; corolla in bud 5 mm. long, puberulent on the outside except for the lower portion, minutely and sparsely villous within except for the lower part, glabrous from the stamen insertion to the base; stamens 4, inserted in the lower part of the corolla-tube; filaments with a few glanduliferous hairs at the base; style slender; stigma very shortly bifid; ovary striate at the base, smooth at the apex, with a few hairs.

VITEX EXCELSA Moldenke

Additional literature: Moldenke, *Phytologia* 5: 333—334. 1955; Moldenke, *Résumé* 111 & 476. 1959.

The flowers are described as violet, the tree blossoming in February, growing at an altitude of 300 meters, and called "malcopeici" in the Paramaka dialect. It has been misidentified in herbaria as V. polygama Cham.

Additional citations: FRENCH GUIANA: Herb. Bot. Mus. Utrecht 59365b (Ut). BRAZIL: Amazonas: Krukoff 6873 (Mi--isotype).

VITEX FISCHERI Gtrke

Additional literature: Moldenke, *Phytologia* 5: 335—336. 1955; Moldenke, *Résumé* 145, 146, & 476. 1959.

Recent collectors describe this as a tree, 20 feet tall, with green fruit in January, growing on sandy soils.

Additional citations: TANGANYIKA: Shantz & Turner 4235 (Au).

VITEX FLAVA Ridl.

Additional literature: Moldenke, *Phytologia* 5: 336. 1955; Moldenke, *Biol. Abstr.* 30: 3551. 1956; Moldenke, *Résumé* 193 & 476. 1959.

VITEX FLORIDULA Duchass. & Walp.

Additional literature: Moldenke, *Phytologia* 5: 361—362. 1956; Moldenke, *Résumé* 49 & 476. 1959.

Additional citations: PANAMA: Panamá: P. H. Allen 959 (Ca—790750, Mi).

VITEX GAMOSEPALA Griff.

Additional literature: Moldenke, *Phytologia* 5: 364—365. 1956; Moldenke, *Résumé* 178, 181, 383, & 476. 1959.

Additional citations: MALAYA: Selangor: Kloss s.n. [Menuang Gasing, 1912] (Ca--266873).

VITEX GAMOSEPALA var. *KUNSTLERI* King & Gamble

Additional literature: Moldenke, *Phytologia* 5: 365—366. 1956; Moldenke, *Résumé* 181, 188, 194, 379, 386, 390, 391, & 476. 1959.

Additional synonymy: *Vitex vestita* var. glabrior H. J. Lam ex Moldenke, *Phytologia* 6: 213. 1958. Vitis gamosepala Henderson, in herb.

Recent collectors describe this plant as a shrub 12 feet tall or a tree 25 feet tall and with a trunk 8 inches in diameter, with lemon-yellow flowers in April, growing in forests or at the edge of forests at an altitude of 3000 meters. The Yates 2036 specimen in the University of California herbarium is accompanied by a photograph.

Additional citations: MALAYA: Pahang: M. R. Henderson 11420 (Ca--360539). SUMATRA: Boeea 7155 (Ca--14675), 7971 (Ca--14665); Forbes 2771 (N—photo); Posthumus 702 (B); Yates 1183 (Ca--251192), 2036 (B, Ca--291986).

VITEX GARDNERIANA Schau.

Additional literature: Moldenke, *Phytologia* 5: 366—368 (1956) and 6: 14. 1957; Moldenke, *Résumé* 111, 383, & 476. 1959.

Cutler reports the flowers as blue, in October, and found the plant growing alongside a dry wash. It has been misidentified in herbaria as Citharexylum sp.

Additional citations: BRAZIL: Ceará: Cutler 8263 (N); Drouet 2389 (Mi).

VITEX GAUMERI Greerm.

Additional literature: Moldenke, *Phytologia* 5: 368—373 & 404 (1956) and 5: 466. 1957; Moldenke, *Résumé* 40, 43, 44, 329, 383, 388, & 476. 1959.

Williams & Molina R. found this species in a pine forest area in Honduras.

Additional citations: MEXICO: Campeche: Matuda 3905 (Mi). Tabasco: Matuda 3115 (Mi), 3231 (Mi). Yucatán: Gaumer & sons 23567 (B). HONDURAS: Morazán: Williams & Molina R. 10271 (Ca--10786).

VITEX GIGANTEA H.B.K.

Additional literature: Holdridge & al., *Forests West. & Cent. Ecuador* 23, 25, 46, & 67. 1947; Moldenke, *Phytologia* 5: 373—375. 1956; Moldenke, *Résumé* 81, 85, 225, & 476. 1959.

Asplund reports the flowers as light bluish-violet, blooming in October. Miss Mexia calls it an almost leafless tree, with "good hard wood."

Additional citations: ECUADOR: Guayas: Böcher, Hjerting, & Rahn 201 (S). PERU: Loreto: Mexia 6177 (Go, Go, Mi). CULTIVATED:

Ecuador: Asplund 18198 (S).

VITEX GLABRATA R. Br.

Additional literature: Moldenke, *Phytologia* 5: 376--381 (1955) and 6: 14. 1957; Moldenke, *Résumé* 159, 164, 166, 177, 178, 181, 185, 191, 194--196, 198, 199, 202, 211, 225, 382--387, & 476. 1959.

Collectors describe this as a "good-sized tree" or a tree to 20 feet tall, in primary forests, along riversides, and at stream margins, with violet flowers and very dark-colored fruit. It is said to be rather common in Dutch New Guinea. It has been found in anthesis in June and in fruit in August. The common name "amuraon" is recorded from the Philippines. Rodin 794 was misidentified as Allophyllus sp.

Additional citations: INDOCHINA: Annam: Clemens & Clemens 4179 (Ca--339854). Cambodia: Harmand s.n. [6 juni 1875] (B); Thorel s.n. [Me-Kong] (B). Cochinchina: Harmand s.n. [Hué] (B). THAILAND: Boonkird 7 [Herb. Roy. Forest Dept. 2477] (Vi); Kerr s.n. [June 1st, 1924] (Ca--248912); Pierre 110 (B). PHILIPPINE ISLANDS: Negros: Masias, Sareno, & Torribile s.n. [Herb. Philip. Forest. Bur. 30116] (Ca--291854). Palawan: Cenabre s.n. [Herb. Philip. Forest. Bur. 29988] (Ca--291787). MARIANNA ISLANDS: Guam: Rodin 794 (Ca--756878). JAVA: Koorders 9748b (Ca--265953). CELEBES: Boschproefst. BB.3027 (Ca--234910). NEW GUINEA: Dutch New Guinea: H. J. Lam 1144 (Ca--234912, Ca--374628, Ca); Schram B.W.2748 (Ng--20215).

VITEX GLABRATA var. POILANEI Moldenke

Additional literature: Moldenke, *Phytologia* 4: 61 (1952) and 5: 383. 1956; Moldenke, *Résumé* 177 & 476. 1959.

The variety has been collected in anthesis in May.

Additional citations: INDOCHINA: Cochinchina: Pierre 1838 (Ca--38164); Poilane 40849 (B--isotype, Ca--53765--isotype); Thorel 1084 (B), s.n. [Ihany] (Ca--53756).

VITEX GRANDIFOLIA Gürke

Additional synonymy: Vitex grandiflora Gürke, in herb. [not V. grandiflora Turcz., 1863].

Additional literature: Moldenke, *Phytologia* 5: 385--387 & 404. 1956; Moldenke, *Résumé* 136--140, 225, 381--383, 386, & 476. 1959.

Blickenstaff describes the flowers of this species as "yellow with brown centers" and found the plant blooming in March in secondary growth. Daniel found it in sandy soil along a stream, flowering in April.

Additional citations: LIBERIA: Blickenstaff 18 (N); P. M. Daniel 331 (N); E. H. L. Krause 16837 (B). CAMEROONS: Bütsen 72a (B); Zenker s.n. [Bipindi, May 1897] (Ca--620194). FRENCH EQUATORIAL AFRICA: Gabun: Klaine 3235 (Ca--54409), 3268 (B), s.n. [Libreville] (N).

VITEX HARVEYANA H. H. W. Pearson

Additional literature: Moldenke, *Phytologia* 5: 390--391. 1956; Moldenke, *Résumé* 151, 154, 389, & 476. 1959.

The Rodin 4232, cited below, is cited by Miss Bruce in her original description of V. patula E. A. Bruce. This taxon obviously needs further study.

Additional citations: SOUTHERN RHODESIA: E. H. Wilson s.n. [Victoria Falls, January 13, 1922] (Ca--381198). UNION OF SOUTH AFRICA: Transvaal: Rodin 4232 (Ca--803667).

VITEX HAUSKNECHTII Bormm.

Additional literature: Moldenke, *Phytologia* 5: 391--392. 1956; Moldenke, *Résumé* 158, 380, 384, & 476. 1959.

The Gabriels on their collection no. 3 of V. agnus-castus var. pseudo-negundo Hausskn. affirm that in their opinion V. haus-knechtii is merely another name for the same taxon.

Citations: SYRIA: Haussknecht s.n. [Marasch] (B--isotype).

VITEX HEMSLEYI Briq.

Additional literature: Moldenke, *Phytologia* 5: 393 & 404--405. 1956; Moldenke, *Résumé* 40, 276, 382, 385, 387, 415, 416, & 476. 1959.

McVaugh describes the flowers as blue, tinged violet, the lower lip darker, the orifice of the lower lip yellow-margined, purple and white lined, fruit green, hard. He reports the tree as occasional on bluffs of wooded barrancas, and on rocky hills in deciduous forest dominated by various legumes, Bursera, and Ficus, at altitudes of 135 to 300 meters.

Additional citations: MEXICO: Colima: McVaugh 15490 (Mi), 15770 (Mi). Guerrero: Hinton 10189 (Ca--98243, Mi, N). Michoacán: Hinton 13789 (Ur).

VITEX HEPTAPHYLLA A. L. Juss.

Additional synonymy: Vitex umbrosa Auct. ex Alain in León & Alain, *Fl. Cuba* 4: 318, in syn. 1957 [not V. umbrosa Sw., 1800, nor G. Don, 1824, nor Schau., 1940].

Additional literature: Griseb., *Abhand. König. Gesell. Wissen. Götting.* 7: 257. 1857; Moldenke, *Phytologia* 5: 406--409. 1956; Alain in León & Alain, *Fl. Cuba* 4: 317 & 318, fig. 137. 1957; Moldenke, *Résumé* 53, 57, 381, 384, 386, 390, & 476. 1959.

Illustrations: Alain in León & Alain, *Fl. Cuba* 4: fig. 137. 1957.

Grisebach, in the reference cited above, implies that this species is found on Guadeloupe and Dominica, but it is V. divaricata Sw. which occurs on those islands. Holdridge reports that the tree has a trunk 3 dm. in diameter at breast-height when 8 m. tall, the flowers deep-purple, and the fruit orange, flowering and fruiting in December, growing at 1000 m. altitude.

Additional citations: CUBA: Oriente: C. Wright 1355 [1860] (Ca-936795). HISPANIOLA: Dominican Republic: Ekman H.11292 (W--

1710990). Haiti: Holdridge 1839 (M1, N).

VITEX HOCKII DeWild.

Synonymy: Vitex cussoniifolia Peter ex Moldenke, Résumé 382, in syn. 1959. Vitex rudis Peter ex Moldenke, Résumé 388, in syn. 1959.

Additional literature: Moldenke, Phytologia 5: 410. 1956; Moldenke, Résumé 142, 147, 382, 388, 426, & 476. 1959; Moldenke, Résumé Suppl. 1: 9. 1959.

Peter describes this plant as a shrub, 2 meters tall, with blue flowers, blossoming in February, growing at altitudes of 800 to 1350 meters.

Additional citations: TANGANYIKA: A. Peter 36847 [V.154] (B), 37495 [V.164] (B), 46368 [V.178] (B).

VITEX HOLOADENON Dop

Synonymy: Vitex holoadendron Dop ex Moldenke, Résumé 384, in syn. 1959.

Additional literature: Moldenke, Phytologia 5: 410—411. 1956; Moldenke, Résumé 177, 384, & 476. 1959.

Citations: INDOCHINA: Cambodia: Thorel 2028 (B—cotype).

VITEX INTEGRIFOLIA Urb.

Additional literature: Moldenke, Phytologia 5: 416—417. 1956; Moldenke, Résumé 57 & 476. 1959.

Additional citations: HISPANIOLA: Dominican Republic: Ekman H.14882a (Ca—608086).

VITEX KENIENSIS Turrill

Additional literature: Moldenke, Phytologia 5: 420—422. 1956; Moldenke, Résumé 146 & 476. 1959.

Recent collectors describe this plant as a tree or small tree, 5—10 meters tall; crown low, wide-spreading, bushy; trunk about 15 cm. in diameter; bark gray-brown, corrugated; sap colorless; petioles pubescent; calyx yellow-brown-pilose; corolla white, or whitish with a purplish lower lip, the petals yellowish on the outside, white inside, the lower lip purplish-violet; anthers yellow-brown; stigma light-green; fruit green when unripe, partly flushed with brown, white-dotted, edible, used to add flavor to tobacco snuff; flowers aromatic.

It is said to inhabit wooded grasslands, in thick forests on red fossil sandy laterized soil, and in grass-covered glades with scattered trees or tree-clumps, among others Erythrina sp., at an altitude of 1600 meters, flowering in July, September, and November. A native name is "mpuru". Herbarium material has been misidentified as V. fischeri Gürke. Drummond & Hemsley found it in secondary regeneration on old cultivated land, flowering in October.

Citations: TANGANYIKA: Tanner 1119 (Ca—168647). KENYA: Bogdan 439 (Ca—984078); Drummond & Hemsley 4752 (S, Z); Maas Geesteranus 6282 (Ca—92359).

VITEX KLUGII Moldenke

Additional literature: Moldenke, *Phytologia* 5: 422--424. 1956; Moldenke, *Am. Midl. Nat.* 59: 365. 1958; Moldenke, *Résumé* 69, 74, 85, 111, 380, 390, & 476. 1959.

Recent collectors describe the flowers of this plant as having the 2 upper corolla-lobes white and the 3 lower ones purple. They found it in a slope forest from 650 to 700 meters in altitude.

Additional citations: VENEZUELA: Amazonas: Maguire, Wurdack, & Maguire 42575 (N). BRAZIL: Amazonas: Krukoff 7149 (Mi).

VITEX KRUKOVII Moldenke

Additional literature: Moldenke, *Phytologia* 5: 424--425. 1956; Moldenke, *Résumé* 111 & 476. 1959.

Additional citations: BRAZIL: Amazonas: Krukoff 6279 (Mi--isotype).

VITEX KUYLENII Standl.

Additional literature: Moldenke, *Phytologia* 5: 425--427 (1956) and 5: 466. 1957; Moldenke, *Résumé* 40, 43, 44, 384, 385, 389, & 476. 1959.

The C. L. Lundell 6421, distributed as this species, is not verbenaceous; it is probably a species of Tabebuia in the Bignoniaceae.

VITEX KWANGSIENSIS P'ei

Additional literature: Moldenke, *Phytologia* 5: 427--428. 1956; Moldenke, *Résumé* 171 & 476. 1959.

Citations: CHINA: Kwangsi: H. B. Morse 617 (N--type).

VITEX LANCEOLATA Turcz.

Additional literature: Moldenke, *Phytologia* 5: 430--431. 1956; Moldenke, *Résumé* 191 & 476. 1959.

Examination of a photograph of the type of this species, recently received from Russia, reveals that the species is conspecific with Psychotria sarmentosa Blume and is to be reduced to the synonymy of that rubiaceous plant.

VITEX LANIGERA Schau.

Additional literature: Moldenke, *Phytologia* 5: 431--432. 1956; Moldenke, *Résumé* 157, 251, & 476. 1959.

Humbert states that the flowers of this plant are dark-purple, with the filaments and anthers dark-violet.

Additional citations: MADAGASCAR: Humbert 2964 (B), 3627 (B).

VITEX LEUCOXYLON L. f.

Additional literature: Moldenke, *Phytologia* 5: 436--439. 1956; Moldenke, *Résumé* 164, 166, 167, 181, 191, 225, 385, 388, 389, 393, & 476. 1959.

Additional citations: INDIA: Bombay: Hohenacker 451 (Ut--115370b).

VITEX LIMONIFOLIA Wall.

Additional literature: Moldenke, *Phytologia* 5: 439—440. 1956; Moldenke, *Résumé* 166, 177, 178, 225, 380, 385, & 476. 1959.

Additional citations: BURMA: Upper Burma: Wallich 1754 "1 et 2" (B—isotype). INDOCHINA: Cambodia: Pierre 5216 (Ca—54809). THAILAND: Charoenmayu 495 [Herb. Roy. Forest Dept. 4386] (Vi); Pierre 5216, in part (B).

VITEX LOKUNDJENSIS Pieper

Additional literature: Moldenke, *Phytologia* 5: 443—444. 1956; Moldenke, *Résumé* 139, 142, 145, 149, & 476. 1959.

Peter collected this species at 1400 meters altitude in Tanganyika, but misidentified it as V. quadrangula Gürke. The Zenker collection cited below was misidentified as V. bipindensis Gürke, while Schlieben 1681 was annotated by someone as "Vitex prob. nov. aff. Lehmbachii Gürke".

Additional citations: CAMEROONS: Zenker s.n. [Bipinde, July 1918] (Ca—483845). TANGANYIKA: A. Peter 6997 [O.II.105] (B); Schlieben 1681 (B, B), 3148 (B), 3255 (B).

VITEX LONGIPETIOLATA Gürke

Additional literature: Moldenke, *Phytologia* 5: 444—445. 1956; Moldenke, *Résumé* 139 & 476. 1959.

Herbarium material of this plant has been misidentified as V. bipindensis Gürke.

Additional citations: CAMEROONS: Zenker 1888 (B—isotype), 3185 (B), 4795 (B), s.n. [Bipindi, Sept. 1904] (N), s.n. [Bipindi] (Ca—620104).

VITEX LONGISEPALA King & Gamble

Additional synonymy: Vitex longisepala King ex Ridl., Kew Bull. 1929: 261 & 262. 1929.

Additional literature: Ridl., Kew Bull. 1929: 261—262. 1929; Moldenke, *Phytologia* 5: 445—446. 1956; Moldenke, *Résumé* 178, 181, & 476. 1959.

The species has been collected in anthesis in November.

Additional citations: MALAYA: Negri Sembilan: Holttum 9807 (Ca—346226).

VITEX LUCENS T. Kirk

Additional and emended literature: Raoul Choix 44. 1846; Hook. f., Fl. Nov. Zel. 1: 203. 1853; Hook. f., Handb. New Zeal. Fl. 223. 1864; Laing & Blackwell, Pl. New Zeal., ed. 1, 350 & 351, fig. 114. 1906; Cheeseman, Man. New Zeal. Fl., ed. 1, 565. 1906; Cockayne, Distrib. Veg. Fl. N. Zeal. 14. 1919; Cheeseman, Man. New Zeal. Fl., ed. 2, 763—764. 1925; Laing & Blackwell, Pl. New Zeal., ed. 3, 354—356, fig. 127 (1927) and ed. 4, 372—373, fig. 139. 1940; Moldenke, *Phytologia* 5: 446—448. 1956; Moldenke, *Résumé* 211, 225, 285, 383, 385, 387, & 476. 1959.

Additional illustrations: Laing & Blackwell, Pl. New Zeal., ed. 1, fig. 114 (1906), ed. 3, fig. 127 (1927), and ed. 4, fig. 139. 1940.

Cheeseman states that this species is abundant on North Island from the North Cape to the Waikato and Upper Thames, then sparingly southward to Mahia Peninsula and Cape Egmont, growing from sea-level to 2500 feet altitude, and blooming from June to October. He says that it is "A well-known tree, producing the most valuable hardwood in the Dominion, extensively used for all purposes requiring great strength and durability, as railway-sleepers, the framework of bridges, piles, house-blocks, &c. Also greatly employed for furniture and cabinetwork, and quite equal in figure and general appearance to the best Italian or American walnut."

Cockayne, in the reference cited above, states that this is one of the some 56 species, of which 45 are common or fairly common, which appear to be stopped in New Zealand by the so-called 38° S. phytogeographic barrier. Miss L. B. Moore, in a letter to me dated August 6, 1959, says that the southern limit for this species is nearer 39° S. lat.

Walker describes it as a large tree, a new trunk forming from the branches if the tree blows over, with green fruit in April which become red when riper and finally turn purple. He found it in an open pasture. The Setchell collection cited below represents a seedling and shows very coarsely serrate leaves.

Additional citations: NEW ZEALAND: North Island: Inackie s.n. [Waikowhai, 8/10/32] (Ca—583292); W. A. Setchell s.n. [Ruatangata, July 11, 1904] (Ca—61420), s.n. [Ruatangata, July 12] (Ca—61406); E. H. Walker 5312 (Ca—923255).

VITEX LUTEOGLANDULOSA H. J. Lam

Additional literature: Moldenke, Phytologia 5: 448—449. 1956; Moldenke, Résumé 202 & 477. 1959.

The labels on the type collection are inscribed "Plantae Papuanae", but the material actually came from what was then called Kaiser-Wilhelmsland, now Northeastern New Guinea, not Papua. It has been collected in anthesis in September.

Additional citations: NEW GUINEA: Northeastern New Guinea: F. R. R. Schlechter 16593 (Ca—226889—isotype).

VITEX MADIENSIS Oliv.

Additional literature: Moldenke, Phytologia 5: 451—455. 1956; Moldenke, Résumé 133, 134, 136, 139, 140, 142, 143, 147, 381, 386, & 477. 1959.

Additional citations: ANGOLA: Lunda: Buchner 575 (B); Gossweiler 13624 (B), 13692 (B).

VITEX MADIENSIS var. MILANJIENSIS (Britten) Pieper

Additional literature: Moldenke, Phytologia 5: 453 & 457—458. 1956; Moldenke, Résumé 142, 148, 150, 151, 386, 388, & 477. 1959; Moldenke, Résumé Suppl. 1: 10. 1959.

Additional citations: PORTUGUESE EAST AFRICA: Mozambique: A. Peter 51198 [S.67] (B).

VITEX MASONIANA Pittier

Additional literature: Moldenke, *Phytologia* 5: 461—463. 1956; Moldenke, *Résumé* 49, 386, & 477. 1959.

Recent collectors describe this as a tree 50 to 150 feet tall, with a trunk diameter at breast height of 6 to 34 inches, a widely spreading crown, coarse leaves, pale-purple flowers, the central lobe of the lower lip purple, yellow in the throat, the outer lobes white to lavender, anthers black, filaments white, and the immature fruit green, later brown, fruity in odor, growing at the edges of roads, flowering in July, in fruit in June and July.

Additional citations: PANAMA: Darien: Stern, Chambers, Dwyer, & Ebinger 299 (Bm), 903 (Bm), 958 (Z).

VITEX MEGAPOTAMICA (Spreng.) Moldenke

Additional literature: A. Schultz, *Introd. Estud. Bot. Sist.*, ed. 2, 484 & 562. 1943; Moldenke, *Phytologia* 5: 464 & 466—471 and 6: 14. 1957; Angely, *Fl. Paran.* 11: 22 & 31. 1957; Veloso & Klein, *Sellowia* 8: 182, 186, & 220. 1957; Moldenke, *Résumé* 111, 118, 120, 128, 225, 237, 341, 386, 389, 391, & 477. 1959; Reitz, *Sellowia* 11: 135. 1959; Veloso & Klein, *Sellowia* 11 (10): 99 & 105. 1959; A. R. Schultz, *Inst. Tec. Rio Grande do Sul Pub.* 30: 15. 1960; Rambo, *Pesquisas* 4: 18. 1960; Angely, *Fl. Paran.* 16: 80 (1960) and 17: 47. 1961.

Additional vernacular names recorded for this plant are "raeumã preto", "tapinhoã", "taruma duro", and "tarumã preta". It has been collected at sea-level, in pinewoods, residual forests, riverbank forests, and "in mato branco without Araucaria". The flowers are described by Brade as yellowish and blue, while Reitz & Klein describe them as white and red or white and light-violet, and the fruit as dark-red. They found the species on varzea land, fruiting in February.

Additional citations: BRAZIL: Paraná: H. M. Filho 74 [Herb. Mus. Paran. 5316; Herb. Curso Farmac. 719] (S). Rio de Janeiro: Brade 14126 [Herb. Rio de Jan. 29519] (B); Santos Lima & Brade 13295 [Herb. Rio de Jan. 29518] (B). Rio Grande do Sul: Rambo 27080 (Gg—354595); Sehnem 3516 (Gg—356389). Santa Catarina: Klein 232 [Herb. Barb. Rodr. 4610] (N), 303 [Herb. Barb. Rodr. 4653] (N), 1852 [Herb. Barb. Rodr. 10069] (N, W—2220607), 1858 (W—2220609); Rambo 31521 (Ur); Reitz & Klein 3009 [Herb. Barb. Rodr. 14212] (N, Sm), 5915 (Sm), 5968 [Herb. Barb. Rodr. 16273] (N, Sm), 6409 (Sm), 7581 (Mm), 7613 (Mm), 8506 (Mm), 9325 (Gg); Smith & Klein 8027 (N, Ok), 8284 (Ok), 10685 (Ok), 11928 (Ok). PARAGUAY: Hassler 11417 (T1). URUGUAY: Herter 1392 [Herb. Herter 88856] (N), 1392b [Herb. Herter 94042] (N). CULTIVATED: Uruguay: Herter 1392d [Herb. Herter 98517] (N).

VITEX MEXIAE Moldenke

Additional literature: Moldenke, *Phytologia* 5: 471--473. 1957; Moldenke, *Résumé* 111, 225, 381, 389, & 477. 1959.

Irwin describes the corolla as pale-lavender, and notes that the plant is common in red clay soil of secondary forests.

Additional citations: BRAZIL: Minas Gerais: Irwin 2062 (N, W--2281262); Mexia 5251 (Go), 5474 (Go).

VITEX MICRANTHA Gürke

Additional literature: Moldenke, *Phytologia* 5: 473--474. 1957; Moldenke, *Résumé* 137, 139, 385, & 477. 1959.

An additional vernacular name recorded for this plant is "and-ofiti".

Additional citations: IVORY COAST: Aubréville 105 (N); Banco 386 (B, Ca--53500).

VITEX MOLLIS H.B.K.

Additional literature: Moldenke, *Phytologia* 5: 476--481. 1957; Moldenke, *Résumé* 40, 225, 276, 384--387, 389, 390, & 477. 1959.

Hinton found this species growing in a coconut orchard at only 20 meters altitude. Other recent collectors have found it scattered in small canyons, in rocky deciduous woodlands, abundant near the summits of ravines, in open brushy palm savannas, an uncommon tree in loam soil on old lava flows in open sun, in gravelly-granite soil on hillslopes, on arid slopes with low scattered trees, and in grazed areas with the vegetation mostly thorny leguminous trees and shrubs. King reports it as "a fairly common tree" in Oaxaca, while the Wilburs describe it as a "very common tree.. fruit sold in markets" in Jalisco. Turner reports that it is used by the natives in Michoacán in treatment of stomach ache. Pennington 106 is a mixture with something non-verbenaceous. He reports that the fruit is "very refreshing, eaten raw or added to goat milk; leaves are boiled and put on rheumatic patients".

Recent collectors describe the crown as 25 m. wide; corolla pale-lavender, the upper (smaller) lip nearly white, the lower lip darker, the tube purple-lined within; fruit globose, brown or black when ripe, reddish on the upper half, to 2.5 cm. wide, resembling a small apple (Malus pumila), juicy.

It has been found in anthesis also in July and November. Additional vernacular names are "atoyac", "higualmo", and "jarí". The M. E. Jones 23032 distributed as this species is actually Tabebuia chrysantha (Jacq.) Nichols. in the Bignoniaceae.

Additional citations: MEXICO: Chihuahua: Hartman 1034 (Ca--702713, Du--351432); Pennington 106 (Au--122928). Guerrero: Hinton 10989 (Ca--97688, Mi, N). Jalisco: McVaugh 11973 (Mi), 12158 (Mi); Wilbur & Wilbur 2018 (Mi). Michoacán: McVaugh 15051 (Mi), 15052 (Mi); B. L. Turner 2183 (Mi); Leavenworth & Hoogstraal 1726 (Mi). Morelos: Pringle 6993 (B). Nayarit: Feddema 446 (Mi); M. E. Jones 22898 (Gg--172864); McVaugh 12078 (Mi), 15222 (Mi). Oaxaca: R. M. King 1259 (W--2301502); Wiggins 13286 (Du--404053). Sonora: R. V.

Moran 4024 (Ca--1758, Du--353268); Wiggins & Rollins 452 (Ca--721797).

VITEX MOMBASSAE Vatke

Additional synonymy: Vitex mombassae Rich. ex Moldenke, Résumé 386, in syn. 1959. Vitex mombassae Vahl ex Moldenke, Résumé, 386, in syn. 1959.

Additional literature: Moldenke, Phytologia 5: 481--483. 1957; Moldenke, Résumé 143, 145, 146, 148--151, 383, 386, 389, & 477. 1959.

Recent collectors describe this species as a small spindly tree, to 5 m. tall, with gray smooth bark and pale-blue or white and blue flowers, blossoming in March and April. It has been collected in fruit in January and August at altitudes to 1640 m. Bullock reports it as common in the scrub on hillsides.

Additional citations: TANGANYIKA: A. A. Bullock 2372 (S); Busse 2784 [A. Peter 51808] (B); Holtz s.n. [A. Peter 51813] (B); A. Peter 22959 [O.IV.278] (B), 34223 [V.115] (B), 35007 [V.126] (B), 35332 [V.132] (B), 39641 [V.208] (B), 44138 [V.324] (B), 44231 [V.325] (B); Schlieben 1477 (B), 5353 (B). BRITISH NYASALAND: Stolz 1737 (B). SOUTHERN RHODESIA: Wormald 79/51 (Ca--10495).

VITEX MONROVIANA Pieper

Additional literature: Moldenke, Phytologia 5: 484--485. 1957; Moldenke, Résumé 137 & 477. 1959.

Dinklage describes this as a medium-sized tree, ferruginous tomentose-hirsute throughout, growing at an altitude of 20 m. It has been misidentified in herbaria as V. rufa A. Chev.

A NEW COLOR FORM OF THE GROUNDNUT

Fred W. Oswald

APIOS AMERICANA f. **KEIHNERI** Oswald, f. nov.

Haec forma a forma typica speciei corollis nisi quod in gula macula parva alba ubique indico- usque ad atro-corinthiano-purpureis recedit.

This form differs from the typical form of the species in that the flowers are completely Indian Purple to Dark Corinthian Purple inside and out, except for a small white area in the throat.

The type of the form was originally discovered by the author in Paramus, Bergen County, New Jersey, in August, 1958, but this area was completely destroyed in creating a parking lot before the plant material could be collected and described. On August